UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, MONTANA OFFICE
FEDERAL BUILDING, 301 S. PARK, DRAWER 10096
HELENA, MONTANA 59626-0096

INSPECTION REPORT

FACILITY: ASARCO East Helena Plant
P.O. Box 1230, E. Helena, MT 59635
EPA ID # MTD 006 230 346
Telephone (406) 227-7191

RESPONSIBLE OFFICIAL: Jon Nickel, Environmental Supervisor
John Cavanaugh, Senior Environmental Engineer

INSPECTION PARTICIPANTS: Susan Zazzali, EPA; Ed Moriarty, and Ed Ganter, SAIC

DATE OF INSPECTION: July 1 & 2, 1996

PURPOSE OF INSPECTION: To sample secondary materials processed by Asarco. Materials sampled were spent metal bearing brick, flux substitutes, partially loaded carbon, and excavated soils. The samples will be analyzed for total metals, TCLP metals and total silica.

FACILITY DESCRIPTION: ASARCO is a primary lead smelter occupying approximately 80 acres in East Helena, Montana. The smelter has been in operation since the late 1800s. The smelter produces primary lead bullion and copper matte and speiss which are further refined at other ASARCO facilities. Source materials for the smelter include virgin ores (60-70% from South America) as well as non-virgin (secondary) metal-bearing materials. The facility also operates an acid plant which produces 93% food grade sulfuric acid.

RESULTS OF INSPECTION: The inspection team arrived at the ASARCO facility at approximately 9:00 AM and met with Jon Nickel to discuss the purpose of our visit. Our expressed purpose was to sample secondary materials processed by Asarco. The materials will be analyzed to assist in waste characterization. The day was clear and calm with the temperature in the low nineties Fahrenheit by midday.

I showed Mr. Nickel the list of materials we wanted to sample (attached). Mr. Nickel made a copy of the list. I told him that the list was based on information submitted by Asarco and was only updated through September 1995. I told him if there were materials brought on site since that date that were spent brick, partially charged carbon, or flux substitutes, that we would like

to sample those materials also. I also told him we would like to sample the excavated soils that he had recently discussed with the Superfund program. I asked Mr. Nickel if Asarco would like to split samples with us. He stated that they would. I told Mr. Nickel that we would provide him with copies of the analysis results and photographs. Mr. Nickel left to call the appropriate people, and the sampling team went to prepare the sampling equipment.

In the parking lot, Mr. Moriarty washed all the scoops in a cooler. The scoops were then rinsed in a dilute nitric acid solution and then rinsed in deionized water. The scoops were air dried and wrapped in aluminum foil. A field blank and equipment blank were then made. At 10:30 the sampling team left with Mr. Nickel for the outdoor storage yard on the south side of the Ore Storage and Handling Building.

Mr. Jim Shaw, Ore Storage Sampling Manager, and Mr. John Cavanaugh, Senior Environmental Engineer, met us in the outdoor storage yard. Mr. Shaw showed us to the individual storage piles. Mr. Cavanaugh took notes and photographed the sampling. The sampling was done in accordance with the SOP (attached). Asarco requested that the split samples be placed in brown paper bags which they provided. The following samples were taken, starting at approximately 10:50 AM:

1. Amarillo Brick — pile #183 — photo #1
2. Excel Optical — pile #1106 — photo #2
3. Kendall Carbon — pile #299 — photo #3
4. Zortman Carbon — pile #278 — photo #4
5. Metals Research Carbon — pile #735 — photo #5
6. Metals Research Carbon — duplicate of sample #5
7. Omaha Refractory — pile #182 — photo #6
   (This material was still in brick form. It was broken up with a rock hammer so that pieces of it could be placed in the sample jar.)
8. East Helena Brick #1 — photo #7
   (Processed for precious metal recovery. In-house materials are not assigned a pile number.)
9. Excavated Soil #1 — photo #8
10. Excavated Soil #2 — photo #9

11. East Helena Brick #2 photo #10
(Processed for lead and flux. Rock hammer used to break up bricks.)

12. Golden Photon Flux pile #? photo #11 and #12
(Rock hammer used to break up glass sheets.)

13. El Paso Brick photo #13

The El Paso brick was stored in railroad cars. I asked why the brick was in the cars. Mr. Shaw stated that they were going to dispose of the brick. I asked if they were planning to dispose of it at Laidlaw's Utah facility. He stated yes. Mr. Nickel told me that they had graded the El Paso brick (separated out smaller diameter material) and smelted the fines. Mr. Nickel stated that most of the precious metals were located in the fines. Mr. Nickel stated that the East Helena brick would also be sent off-site for disposal. He did not say when.

The excavated soils were in several piles totaling approximately 200 feet long, ten feet high and twenty feet wide at the base. The composition of the piles was diverse. Some piles contained soil and bricks, others had large chucks of concrete mixed in the soil, and some were mostly comprised of soil. The two samples we took were not adequate to characterize all the excavated soils.

The only remaining items to be sampled were the Encycle flux substitutes. Mr. Shaw indicated that there were approximately 15 piles of Encycle materials on the facility. I told him I would need to see the analysis sheets to determine which piles we would like to sample. I suggested that they could gather this information that afternoon and we would return the following morning to sample. Mr. Nickel agreed to meet us at 10:00 AM Tuesday morning.

Mr. Nickel asked which analyses we would be running. Mr. Moriarty informed him that we would run EPA Methods 1311 (TCLP-metals), 6010 (total metals), 7471 (mercury) and 7470 (for the water field and equipment blanks). I asked where Asarco planned to have there samples analyzed. Mr. Nickel stated that Asarco's Technical Services in Salt Lake City would do the analyses.

We departed the facility at approximately 1:00 PM.

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Mr. Nickel presented us with a table of the Encycle materials on site that day. The table had some analytical results. According to the table, there were 14 distinct piles of materials, but only 5 different types of materials. I told Mr. Nickel that we would sample the materials which contained less than 40% silica. Mr. Nickel stated that the materials on the list with less than 40% silica were not used as flux substitutes. I told him we still wanted to sample them. The following materials were on the list:

1.	Used circuit boards (The circuit boards were not sampled because they are exempt from regulation as a solid waste. We did not discover this was circuit boards until the containers were opened.)	pile #289	no photo
2.	Encycle material	Bin #13	photo #14
3.	Pb/Cu Sulfide	pile #697	photo #15
4.	Treated East Helena Baghouse Dust #1	pile #520	photo #16
5.	Treated East Helena Baghouse Dust #2	pile #464	photo #17

July 5, 1996
Date of Inspection Report

Susan A. Zazzali
EPA Inspector

cc: Suzanne Bohan, 8ENF-L

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July 5, 1996
Date of Inspection Report

Susan A. Zazzali
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EPA Inspector

cc: Suzanne Bohan, 8ENF-L

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte	EPA Method	MRL	Sample Name: Bin 13 Lab Code: K9603970-003 Date Analyzed: 7/17/96	Pile 697 K9603970-004 7/17/96	Pile 796 K9603970-005 7/17/96
Aluminum	6010A	10	3850	2180	2180
Antimony	6010A	10	339	571	565
Arsenic	6010A	50	1260	2380	2420
Barium	6010A	1	170	150	109
Beryllium	6010A	1	2	ND	ND
Boron	6010A	10	159	345	316
Cadmium	6010A	1	1890	3720	3430
Calcium	6010A	10	14000	21300	15400
Chromium	6010A	2	332	950	1060
Cobalt	6010A	2	268	3850	3470
Copper	6010A	2	21400	130000	116000
Iron	6010A	4	13700	52200	48300
Lead	6010A	20	205000	199000	161000
Magnesium	6010A	2	1500	3180	2450
Manganese	6010A	1	290	418	379
Mercury	7471	0.2	302	22.5	15.7
Molybdenum	6010A	2	173	30	37
Nickel	6010A	10	1560	16200	13100
Potassium	6010A	400	1250	ND	440
Selenium	6010A	50	<200(B)	51	ND
Silicon, as SiO_2 (X)	6010A	20	2530	6180	5210
Silver	6010A	2	264	75	90
Sodium	6010A	20	15800	30100	29800
Vanadium	6010A	2	12	41	31
Zinc	6010A	2	55700	40500	43600

B The MRL is elevated because of matrix interferences.
X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

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Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

		Sample Name:	Pile 520	Pile 464	Amarillo Brick
		Lab Code:	K9603970-006	K9603970-007	K9603970-010
		Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	EPA Method	MRL			
Aluminum	6010A	10	563	612	9410
Antimony	6010A	10	1950	1960	4380
Arsenic	6010A	50	15100	15400	1150
Barium	6010A	1	61	32	2340
Beryllium	6010A	1	ND	ND	ND
Boron	6010A	10	43	80	3220
Cadmium	6010A	1	48100	104000	65
Calcium	6010A	10	10200	13000	13200
Chromium	6010A	2	174	178	603
Cobalt	6010A	2	9	<3(B)	24
Copper	6010A	2	18000	6520	59000
Iron	6010A	4	5640	5810	5180
Lead	6010A	20	197000	162000	14200
Magnesium	6010A	2	403	514	41200
Manganese	6010A	1	132	246	92
Mercury	7471	0.2	23.2	10.5	2.8
Molybdenum	6010A	2	109	52	4
Nickel	6010A	10	146	145	931
Potassium	6010A	400	6140	7950	ND
Selenium	6010A	50	1640	1260	54100
Silicon, as SiO_2 (X)	6010A	20	1250	1230	2920
Silver	6010A	2	282	230	318
Sodium	6010A	20	4380	5480	16200
Vanadium	6010A	2	1	4	113
Zinc	6010A	2	72800	183000	2490

B The MRL is elevated because of matrix interferences.
X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date Extracted:	7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

		Sample Name:	X-Cell Optic Flux	CR Kendell	Zortman Carbon
		Lab Code:	K9603970-011	K9603970-012	K9603970-013
		Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**			
Aluminum	6010A	10	13700	39	239
Antimony	6010A	10	32	ND	ND
Arsenic	6010A	50	97	ND	ND
Barium	6010A	1	12700	9	45
Beryllium	6010A	1	ND	ND	ND
Boron	6010A	10	7880	12	ND
Cadmium	6010A	1	13	18	7
Calcium	6010A	10	12000	28600	18100
Chromium	6010A	2	11	ND	12
Cobalt	6010A	2	40	2	4
Copper	6010A	2	266	74	219
Iron	6010A	4	16600	530	3000
Lead	6010A	20	~~46800~~ 4% Pb	233	20
Magnesium	6010A	2	3590	242	908
Manganese	6010A	1	386	42	354
Mercury	7471	0.2	ND	35.8	12.9
Molybdenum	6010A	2	ND	ND	ND
Nickel	6010A	10	23	125	985
Potassium	6010A	400	7530	ND	ND
Selenium	6010A	50	ND	ND	1130
Silicon, as SiO_2 (X)	6010A	20	739	211	595
Silver	6010A	2	121	7	275
Sodium	6010A	20	8410	6700	1170
Vanadium	6010A	2	11	ND	6
Zinc	6010A	2	3120	1060	195

X HCl soluble SiO_2

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1-2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date Extracted:	7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte	EPA Method	MRL	Sample Name: Metals Research Carbon 1127 Lab Code: K9603970-014 Date Analyzed: 7/17/96	Refractory Brick K9603970-015 7/17/96	Helena Brick (PM) K9603970-016 7/17/96
Aluminum	6010A	10	1780	3120	3470
Antimony	6010A	10	ND	13500	5950
Arsenic	6010A	50	57	14600	12200
Barium	6010A	1	140	11	102
Beryllium	6010A	1	ND	ND	ND
Boron	6010A	10	176	91	88
Cadmium	6010A	1	9	189	7360
Calcium	6010A	10	20100	12000	133000
Chromium	6010A	2	13	98	670
Cobalt	6010A	2	2	87	51
Copper	6010A	2	14	89800	51000
Iron	6010A	4	3330	7930	24100
Lead	6010A	20	23	82300	72800
Magnesium	6010A	2	1600	4150	35600
Manganese	6010A	1	93	41	445
Mercury	7471	0.2	995	2.1	50.9
Molybdenum	6010A	2	ND	2	16
Nickel	6010A	10	281	1150	422
Potassium	6010A	400	ND	ND	777
Selenium	6010A	50	29	492	454
Silicon, as SiO_2 (X)	6010A	20	609	659	1130
Silver	6010A	2	75	263	259
Sodium	6010A	20	12800	42000	17400
Vanadium	6010A	2	6	6	29
Zinc	6010A	2	437	5590	18000

X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

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Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date Extracted:	7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

		Sample Name:	EK-Soil-1	EK Soil-2	East Helena Brick-2
		Lab Code:	K9603970-017	K9603970-018	K9603970-019
		Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**			
Aluminum	6010A	10	6870	8090	8520
Antimony	6010A	10	253	298	9470
Arsenic	6010A	50	3720	2050	13200
Barium	6010A	1	180	242	146
Beryllium	6010A	1	ND	ND	ND
Boron	6010A	10	21	22	38
Cadmium	6010A	1	4030	10800	1320
Calcium	6010A	10	57200	46400	49100
Chromium	6010A	2	16	19	47
Cobalt	6010A	2	121	17	56
Copper	6010A	2	4760	2820	70200
Iron	6010A	4	24300	22000	31100
Lead	6010A	20	30500	44600	84800
Magnesium	6010A	2	13900	5700	5100
Manganese	6010A	1	1290	1100	490
Mercury	7471	0.2	33.1	115	1050
Molybdenum	6010A	2	8	22	8
Nickel	6010A	10	137	29	1040
Potassium	6010A	400	1750	3610	1460
Selenium	6010A	50	68	176	429
Silicon, as SiO_2 (X)	6010A	20	1980	3210	1450
Silver	6010A	2	136	274	302
Sodium	6010A	20	1180	1430	3810
Vanadium	6010A	2	23	32	16
Zinc	6010A	2	19500	20300	5970

X HCl soluble SiO_2.

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Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date Extracted:	7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Analyte	EPA Method	MRL	Sample Name: Lab Code: Date Analyzed: Golden Photon K9603970-020 7/17/96	El Paso Brick K9603970-021 7/17/96	Metals Research Carbon 1132 K9603970-022 7/17/96
Aluminum	6010A	10	ND	5230	2730
Antimony	6010A	10	ND	815	20
Arsenic	6010A	50	ND	2050	128
Barium	6010A	1	1	270	242
Beryllium	6010A	1	ND	ND	ND
Boron	6010A	10	ND	97	136
Cadmium	6010A	1	2040 –	2630	116
Calcium	6010A	10	265	26200	29200
Chromium	6010A	2	23	64	17
Cobalt	6010A	2	ND	36	ND
Copper	6010A	2	7	5540	85
Iron	6010A	4	419	31000	5070
Lead	6010A	20	ND	46100	387
Magnesium	6010A	2	93	3080	2110
Manganese	6010A	1	1	1660	68
Mercury	7471	0.2	ND	203	1290
Molybdenum	6010A	2	ND	20	ND
Nickel	6010A	10	ND	82	131
Potassium	6010A	400	ND	1350	ND
Selenium	6010A	50	ND	460	50
Silicon, as SiO_2 (X)	6010A	20	263	2040	1060
Silver	6010A	2	ND	185	131
Sodium	6010A	20	1130	1070	12600
Vanadium	6010A	2	ND	31	6
Zinc	6010A	2	3	13300	636

X HCl soluble SiO_2.

Approved By: _____ Date: 7/19/96

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Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AIH/01-0834-07-4612-062	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
		Date Extracted:	7/15/96

Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

		Sample Name:	Method Blank
		Lab Code:	K9603970-MB
		Date Analyzed:	7/17/96
Analyte	**EPA Method**	**MRL**	
Aluminum	6010A	10	ND
Antimony	6010A	10	ND
Arsenic	6010A	50	ND
Barium	6010A	1	ND
Beryllium	6010A	1	ND
Boron	6010A	10	ND
Cadmium	6010A	1	ND
Calcium	6010A	10	ND
Chromium	6010A	2	ND
Cobalt	6010A	2	ND
Copper	6010A	2	ND
Iron	6010A	4	ND
Lead	6010A	20	ND
Magnesium	6010A	2	ND
Manganese	6010A	1	ND
Mercury	7471	0.2	ND
Molybdenum	6010A	2	ND
Nickel	6010A	10	ND
Potassium	6010A	400	ND
Selenium	6010A	50	ND
Silicon, as SiO_2 (X)	6010A	20	ND
Silver	6010A	2	ND
Sodium	6010A	20	ND
Vanadium	6010A	2	ND
Zinc	6010A	2	ND

X HCl soluble SiO_2.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Applications International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1-2/96
Sample Matrix:	Water	**Date Received:**	7/3/96
		Date Extracted:	7/15/96

Total Metals
Units: µg/L (ppb)

		Sample Name:	EB-2	FB-2	EB-1
		Lab Code:	K9603970-001	K9603970-002	K9603970-008
		Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**			
Aluminum	6010A	50	ND	ND	ND
Antimony	6010A	50	ND	ND	ND
Arsenic	6010A	100	ND	ND	ND
Barium	6010A	5	ND	ND	ND
Beryllium	6010A	5	ND	ND	ND
Boron	6010A	50	ND	ND	ND
Cadmium	6010A	4	ND	ND	ND
Calcium	6010A	50	93	93	88
Chromium	6010A	5	ND	ND	ND
Cobalt	6010A	10	ND	ND	ND
Copper	6010A	10	ND	ND	ND
Iron	6010A	20	ND	ND	ND
Lead	6010A	50	ND	ND	ND
Magnesium	6010A	10	17	14	16
Manganese	6010A	5	ND	ND	ND
Mercury	7470	0.5	ND	ND	ND
Molybdenum	6010A	10	ND	ND	ND
Nickel	6010A	20	ND	ND	ND
Potassium	6010A	2000	ND	ND	ND
Selenium	6010A	100	ND	ND	ND
Silicon, as SiO_2 (X)	6010A	200	253	254	217
Silver	6010A	10	ND	ND	ND
Sodium	6010A	100	410	380	430
Vanadium	6010A	10	ND	ND	ND
Zinc	6010A	10	ND	ND	ND

X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Applications International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1-2/96
Sample Matrix:	Water	**Date Received:**	7/3/96
		Date Extracted:	7/15/96

Total Metals
Units: µg/L (ppb)

		Sample Name:	FB-1	Method Blank
		Lab Code:	K9603970-009	K9603970-MB
		Date Analyzed:	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**		
Aluminum	6010A	50	ND	ND
Antimony	6010A	50	ND	ND
Arsenic	6010A	100	ND	ND
Barium	6010A	5	ND	ND
Beryllium	6010A	5	ND	ND
Boron	6010A	50	ND	ND
Cadmium	6010A	4	ND	ND
Calcium	6010A	50	90	ND
Chromium	6010A	5	ND	ND
Cobalt	6010A	10	ND	ND
Copper	6010A	10	ND	ND
Iron	6010A	20	ND	ND
Lead	6010A	50	ND	ND
Magnesium	6010A	10	14	ND
Manganese	6010A	5	ND	ND
Mercury	7470	0.5	ND	ND
Molybdenum	6010A	10	ND	ND
Nickel	6010A	20	ND	ND
Potassium	6010A	2000	ND	ND
Selenium	6010A	100	ND	ND
Silicon, as SiO_2 (X)	6010A	200	ND	ND
Silver	6010A	10	ND	ND
Sodium	6010A	100	390	ND
Vanadium	6010A	10	ND	ND
Zinc	6010A	10	ND	ND

X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	ABH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

					Encycle	Pb/Cu sulfide	
				Sample Name:	**Bin 13**	**Pile 697**	**Pile 796**
				Lab Code:	K9603970-003	K9603970-004	K9603970-005
				Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**	**Regulatory Limit***				
Arsenic	3010A/6010A	0.1	5		ND	ND	ND
Barium	3010A/6010A	0.5	100		ND	ND	ND
Cadmium	3010A/6010A	0.01	1		31.9	57.9	48.8
Chromium	3010A/6010A	0.01	5		ND	ND	ND
Lead	3010A/6010A	0.05	5		79.5	71.6	69.5
Mercury	7470	0.001	0.2		0.802	0.042	0.065
Selenium	3010A/6010A	0.1	1		ND	ND	ND
Silver	3010A/6010A	0.01	5		ND	ND	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: ______ [signature] ______ Date: 7/19/96

TCLP/020194
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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1,2/96
Date Received: 7/3/96
Date TCLP Performed: 7/15/96
Date Extracted: 7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

Analyte	EPA Method	MRL	Regulatory Limit*	EX Soil-1	EX Soil-2	East Helena Brick-2
Lab Code:				K9603970-017	K9603970-018	K9603970-019
Date Analyzed:				7/17/96	7/17/96	7/17/96
Arsenic	3010A/6010A	0.1	5	0.5	0.2	2.2
Barium	3010A/6010A	0.5	100	ND	ND	ND
Cadmium	3010A/6010A	0.01	1	40.4	243	18.4
Chromium	3010A/6010A	0.01	5	ND	0.01	ND
Lead	3010A/6010A	0.05	5	67.3	81.7	46.4
Mercury	7470	0.001	0.2	0.001	0.665	0.003
Selenium	3010A/6010A	0.1	1	ND	0.8	ND
Silver	3010A/6010A	0.01	5	ND	ND	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: CMH Date: 7/19/96

TCLP/961U4
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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

				Sample Name:	Golden Photon	El Paso Brick	Metals Research Carbon 1132
				Lab Code:	K9603970-020	K9603970-021	K9603970-022
				Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**	**Regulatory Limit***				
Arsenic	3010A/6010A	0.1	5		ND	0.2	1.6
Barium	3010A/6010A	0.5	100		ND	ND	1.4
Cadmium	3010A/6010A	0.01	1		3.00	49.0	0.34
Chromium	3010A/6010A	0.01	5		ND	ND	ND
Lead	3010A/6010A	0.05	5		0.35	201	0.36
Mercury	7470	0.001	0.2		ND	ND	2.34
Selenium	3010A/6010A	0.1	1		ND	0.3	0.2
Silver	3010A/6010A	0.01	5		ND	ND	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	NA
Sample Matrix:	Solid	**Date Received:**	NA
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

			Sample Name:	**Method Blank**
			Lab Code:	K9603970-MB
			Date Analyzed:	7/17/96
Analyte	**EPA Method**	**MRL**	**Regulatory Limit***	
Arsenic	3010A/6010A	0.1	5	ND
Barium	3010A/6010A	0.5	100	ND
Cadmium	3010A/6010A	0.01	1	ND
Chromium	3010A/6010A	0.01	5	ND
Lead	3010A/6010A	0.05	5	ND
Mercury	7470	0.001	0.2	ND
Selenium	3010A/6010A	0.1	1	ND
Silver	3010A/6010A	0.01	5	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: ____________ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1,2/96
Date Received: 7/3/96
Date TCLP Performed: 7/15/96
Date Extracted: 7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

				Sample Name:	Pile 520 (E Helena baghouse dust)	Pile 464 (E Helena baghouse dust)	Amarillo Brick
				Lab Code:	K9603970-006	K9603970-007	K9603970-010
				Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	EPA Method	MRL	Regulatory Limit*			
Arsenic	3010A/6010A	0.1	5		0.2	ND	5.8
Barium	3010A/6010A	0.5	100		ND	ND	4.2
Cadmium	3010A/6010A	0.01	1		1160	1320	1.46
Chromium	3010A/6010A	0.01	5		0.06	0.07	ND
Lead	3010A/6010A	0.05	5		33.8	119	0.42
Mercury	7470	0.001	0.2		0.001	ND	ND
Selenium	3010A/6010A	0.1	1		1.1	0.8	83.2
Silver	3010A/6010A	0.01	5		ND	ND	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	ARH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

				Sample Name:	X-Cell Optic Flux	CR Kendall	Zortman Carbon
				Lab Code:	K9603970-011	K9603970-012	K9603970-013
				Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**	**Regulatory Limit***				
Arsenic	3010A/6010A	0.1	5		0.1	0.2	0.2
Barium	3010A/6010A	0.5	100		10.3	ND	0.7
Cadmium	3010A/6010A	0.01	1		0.39	0.07	ND
Chromium	3010A/6010A	0.01	5		ND	ND	ND
Lead	3010A/6010A	0.05	5		18.6	0.18	ND
Mercury	7470	0.001	0.2		ND	0.039	0.038
Selenium	3010A/6010A	0.1	1		0.3	ND	0.8
Silver	3010A/6010A	0.01	5		ND	ND	0.53

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

					Omaha	
				Metals Research		**Helena Brick**
			Sample Name:	**Carbon 1127**	**Refractory Brick**	**(PM)**
			Lab Code:	K9603970-014	K9603970-015	K9603970-016
			Date Analyzed:	7/17/96	7/17/96	7/17/96
Analyte	**EPA Method**	**MRL**	**Regulatory Limit***			
Arsenic	3010A/6010A	0.1	5	1.1	2.5	2.0
Barium	3010A/6010A	0.5	100	0.8	ND	ND
Cadmium	3010A/6010A	0.01	1	0.02	0.40	51.5
Chromium	3010A/6010A	0.01	5	ND	ND	ND
Lead	3010A/6010A	0.05	5	ND	2.88	39.4
Mercury	7470	0.001	0.2	1.04	0.003	0.001
Selenium	3010A/6010A	0.1	1	0.2	1.3	0.5
Silver	3010A/6010A	0.01	5	ND	ND	ND

* From 40 CFR Part 261, et al., and *Federal Register*, March 29, 1990 and June 29, 1990.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96
Date Analyzed: 7/17/96

Duplicate Summary
Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: Pile 796
Lab Code: K9603970-005

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Aluminum	6010A	10	2180	2150	2160	1
Antimony	6010A	10	565	571	568	1
Arsenic	6010A	50	2420	2320	2370	4
Barium	6010A	1	109	124	116	13
Beryllium	6010A	1	ND	ND	ND	-
Boron	6010A	10	316	308	312	3
Cadmium	6010A	1	3430	3660	3540	6
Calcium	6010A	10	15400	15700	15600	2
Chromium	6010A	2	1060	971	1020	9
Cobalt	6010A	2	3470	3430	3450	1
Copper	6010A	2	116000	117000	116000	<1
Iron	6010A	4	48300	48600	48400	<1
Lead	6010A	20	161000	176000	168000	9
Magnesium	6010A	2	2450	2590	2520	6
Manganese	6010A	1	379	365	372	4
Mercury	7471	0.2	15.7	16.0	15.8	2
Molybdenum	6010A	2	37	37	37	<1
Nickel	6010A	10	13100	13100	13100	<1
Potassium	6010A	400	440	590	515	29
Selenium	6010A	50	64	61	62	5
Silicon, as SiO_2 (X)	6010A	20	5210	5990	5600	14
Silver	6010A	2	90	92	91	2
Sodium	6010A	20	29800	29700	29800	<1
Vanadium	6010A	2	31	31	31	<1
Zinc	6010A	2	43600	47200	45400	8

X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Science Application International Corp.	Service Request:	K9603970
Project:	AEH/01-0834-07-4612-062	Date Collected:	7/1-2/96
Sample Matrix:	Solid	Date Received:	7/3/96
		Date Extracted:	7/15/96
		Date Analyzed:	7/17/96

Duplicate Summary
Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: Zortman Carbon
Lab Code: K9603970-013

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Aluminum	6010A	10	239	231	235	3
Antimony	6010A	10	ND	ND	ND	-
Arsenic	6010A	50	ND	ND	ND	-
Barium	6010A	1	45	44	44	2
Beryllium	6010A	1	ND	ND	ND	-
Boron	6010A	10	ND	ND	ND	-
Cadmium	6010A	1	7	12	10	53
Calcium	6010A	10	18100	17100	17600	6
Chromium	6010A	2	12	13	12	8
Cobalt	6010A	2	4	4	4	<1
Copper	6010A	2	219	246	232	12
Iron	6010A	4	3000	3310	3160	10
Lead	6010A	20	20	24	22	18
Magnesium	6010A	2	908	840	874	8
Manganese	6010A	1	354	364	359	3
Mercury	7471	0.2	12.9	12.8	12.8	<1
Molybdenum	6010A	2	ND	ND	ND	-
Nickel	6010A	10	985	967	976	2
Potassium	6010A	400	ND	ND	ND	-
Selenium	6010A	50	1130	1280	1200	12
Silicon, as SiO_2 (X)	6010A	20	595	550	572	8
Silver	6010A	2	275	251	263	9
Sodium	6010A	20	1170	1140	1160	3
Vanadium	6010A	2	6	6	6	<1
Zinc	6010A	2	195	231	213	17

X HCl soluble SiO_2.

Approved By: [signature] Date: 7/19/96

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Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96
Date Analyzed: 7/17/96

Duplicate Summary
Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: EX-Soil-1
Lab Code: K9603970-017

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Aluminum	6010A	10	6870	6900	6880	<1
Antimony	6010A	10	253	276	264	9
Arsenic	6010A	50	3720	4220	3970	13
Barium	6010A	1	180	182	181	1
Beryllium	6010A	1	ND	ND	ND	-
Boron	6010A	10	21	20	20	5
Cadmium	6010A	1	4030	4360	420	8
Calcium	6010A	10	57200	58400	57800	2
Chromium	6010A	2	16	16	16	<1
Cobalt	6010A	2	121	125	123	3
Copper	6010A	2	4760	5040	4900	6
Iron	6010A	4	24300	24400	24400	<1
Lead	6010A	20	30500	31800	31200	4
Magnesium	6010A	2	13900	14000	14000	<1
Manganese	6010A	1	1290	1310	1300	2
Mercury	7471	0.2	33.1	28.1	30.6	16
Molybdenum	6010A	2	8	9	8	12
Nickel	6010A	10	137	134	136	2
Potassium	6010A	400	1750	1860	1800	6
Selenium	6010A	50	68	75	72	10
Silicon, as SiO_2 (X)	6010A	20	1980	2700	2340	31
Silver	6010A	2	136	148	142	9
Sodium	6010A	20	1180	1230	1200	4
Vanadium	6010A	2	23	22	22	4
Zinc	6010A	2	19500	20800	20200	6

X HCl soluble SiO_2.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96
Date Analyzed: 7/17/96

Matrix Spike Summary
Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: File 796
Lab Code: K9603970-005

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Aluminum	10	400	2180	2430	NA	60-130
Antimony	10	100	565	694	NA	30-120
Arsenic	50	400	2420	2760	NA	60-130
Barium	1	400	109	484	94	60-130
Beryllium	1	10	ND	10	100	60-130
Boron	10	200	316	484	84	60-130
Cadmium	1	10	3430	3770	NA	60-130
Chromium	2	40	1060	1070	NA	60-130
Cobalt	2	100	3470	3750	NA	60-130
Copper	2	50	116000	123000	NA	60-130
Iron	4	200	48300	50100	NA	60-130
Lead	20	100	161000	132000	NA	60-130
Manganese	1	100	379	487	108	60-130
Mercury	0.2	0.5	15.7	11.5	NA	60-130
Molybdenum	2	200	37	266	112	60-130
Nickel	10	100	13100	13600	NA	60-130
Selenium	50	200	64	255	96	60-130
Silicon, as SiO_2 (X)	20	4300	5210	10500	123	60-130
Silver	2	10	90	93	NA	60-130
Vanadium	2	100	31	121	90	60-130
Zinc	2	100	43600	48300	NA	60-130

NA Not Applicable, see case narrative.
X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Science Application International Corp.
Project: AEH/01-0834-07-4612-062
Sample Matrix: Solid

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96
Date Analyzed: 7/17/96

Matrix Spike Summary
Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: Zortman Carbon
Lab Code: K9603970-013

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Aluminum	10	400	239	640	100	60-130
Antimony	10	100	ND	28	28(X1)	30-120
Arsenic	50	400	ND	383	96	60-130
Barium	1	400	45	438	98	60-130
Beryllium	1	10	ND	10	100	60-130
Boron	10	200	ND	183	92	60-130
Cadmium	1	10	7	10	30(X2)	60-130
Chromium	2	40	12	54	105	60-130
Cobalt	2	100	4	102	98	60-130
Copper	2	50	219	236	NA	60-130
Iron	4	200	3000	2440	NA	60-130
Lead	20	100	20	99	79	60-130
Manganese	1	100	354	440	86	60-130
Mercury	0.2	0.5	12.9	13.0	NA	60-130
Molybdenum	2	200	ND	74	37(X1)	60-130
Nickel	10	100	985	1150	NA	60-130
Selenium	50	200	1130	699	NA	60-130
Silicon, as SiO_2 (X3)	2	4300	275	5800	128	60-130
Silver	20	10	1170	960	NA	60-130
Vanadium	2	100	6	102	96	60-130
Zinc	2	100	195	180	NC(X2)	60-130

NA Not Applicable; see case narrative.
X1 Spike recovery out of control due to non-homogeneous nature of the sample as received.
X2 Low spike recovery due matrix interference.
X3 HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1-2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date Extracted:	7/15/96
		Date Analyzed:	7/17/96

Matrix Spike Summary
Total Metals
Units: mg/Kg (ppm)
Dry Weight Basis

Sample Name: EX-Soil-1
Lab Code: K9603970-017

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Aluminum	10	400	6870	6730	NA	60-130
Antimony	10	100	253	470	217(X1)	30-120
Arsenic	50	400	3720	4100	NA	60-130
Barium	1	400	180	534	88	60-130
Beryllium	1	10	ND	10	100	60-130
Boron	10	200	21	211	95	60-130
Cadmium	1	10	4030	4240	NA	60-130
Chromium	2	40	16	53	92	60-130
Cobalt	2	100	121	211	90	60-130
Copper	2	50	4760	3880	NA	60-130
Iron	4	200	24300	19500	NA	60-130
Lead	20	100	30500	30300	NA	60-130
Manganese	1	100	1290	1450	NA	60-130
Mercury	0.2	0.5	33.1	28.3	NA	60-130
Molybdenum	2	200	8	192	92	60-130
Nickel	10	100	137	231	94	60-130
Selenium	50	200	68	226	79	60-130
Silicon, as SiO_2 (X2)	20	4300	1980	8860	160(X1)	60-130
Silver	2	10	136	143	NA	60-130
Vanadium	2	100	23	111	88	60-130
Zinc	2	100	19500	19200	NA	60-130

NA	Not Applicable, see case narrative.
X1	Spike recovery out of control due to non-homogeneous nature of the sample as received.
X2	HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Science Applications International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1-2/96
Sample Matrix:	Water	**Date Received:**	7/3/96
		Date Extracted:	7/15/96
		Date Analyzed:	7/17/96

Duplicate Summary
Total Metals
Units: µg/L (ppb)

Sample Name: ER-2
Lab Code: K9603970-001

Analyte	EPA Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Aluminum	6010A	50	ND	ND	ND	-
Antimony	6010A	50	ND	ND	ND	-
Arsenic	6010A	100	ND	ND	ND	-
Barium	6010A	5	ND	ND	ND	-
Beryllium	6010A	5	ND	ND	ND	-
Boron	6010A	50	ND	ND	ND	-
Cadmium	6010A	4	ND	ND	ND	-
Calcium	6010A	50	93	95	94	2
Chromium	6010A	5	ND	ND	ND	-
Cobalt	6010A	10	ND	ND	ND	-
Copper	6010A	10	ND	ND	ND	-
Iron	6010A	20	ND	ND	ND	-
Lead	6010A	50	ND	ND	ND	-
Magnesium	6010A	10	17	16	16	6
Manganese	6010A	5	ND	ND	ND	-
Mercury	7470	0.5	ND	ND	ND	-
Molybdenum	6010A	10	ND	ND	ND	-
Nickel	6010A	20	ND	ND	ND	-
Potassium	6010A	2000	ND	ND	ND	-
Selenium	6010A	100	ND	ND	ND	-
Silicon, as SiO_2 (X)	6010A	200	253	278	266	9
Silver	6010A	10	ND	ND	ND	-
Sodium	6010A	100	414	412	413	<1
Vanadium	6010A	10	ND	ND	ND	-
Zinc	6010A	10	ND	ND	ND	-

X HCl soluble SiO_2.

Approved By: [signature] Date: 7/18/96

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ICP-DUP 7/18/96

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Science Applications International Corp.
Project: ARH/01-0834-07-4612-062
Sample Matrix: Water

Service Request: K9603970
Date Collected: 7/1-2/96
Date Received: 7/3/96
Date Extracted: 7/15/96
Date Analyzed: 7/17/96

Matrix Spike Summary
Total Metals
Units: µg/L (ppb)

Sample Name: ER-2
Lab Code: K9603970-001

Analyte	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS Percent Recovery Acceptance Limits
Aluminum	50	2000	ND	2150	108	75-125
Antimony	50	500	ND	555	111	75-125
Arsenic	100	2000	ND	2070	104	75-125
Barium	5	2000	ND	2190	110	75-125
Beryllium	5	50	ND	53	106	75-125
Boron	50	1000	ND	1040	104	75-125
Cadmium	4	50	ND	58	116	75-125
Chromium	5	200	ND	219	110	75-125
Cobalt	10	500	ND	501	100	75-125
Copper	10	250	ND	267	107	75-125
Iron	20	1000	ND	1070	107	75-125
Lead	50	500	ND	551	110	75-125
Manganese	5	500	ND	542	108	75-125
Mercury	0.5	1	ND	1.0	100	60-140
Molybdenum	10	1000	ND	1120	112	75-125
Nickel	20	500	ND	569	114	75-125
Selenium	100	1000	ND	1040	104	75-125
Silicon, as SiO_2 (X)	200	21000	253	23300	110	75-125
Silver	10	50	ND	46	92	75-125
Vanadium	10	500	ND	516	103	75-125
Zinc	10	500	ND	514	103	75-125

X HCl soluble SiO_2.

Approved By: _____ Date: 7/18/96

Page No:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96
		Date Analyzed:	7/17/96

Matrix Spike Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

Sample Name: Pile 796
Lab Code: K9603970-005

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery*
Arsenic	5	ND	5.3	106
Barium	5	ND	4.8	96
Cadmium	1	48.8	49.1	NA
Chromium	5	ND	4.35	87
Lead	5	69.5	65	NA
Mercury	0.01	0.065	0.075	NA
Selenium	1	ND	1.2	120
Silver	1	ND	0.9	90

* Percent recovery information is provided in order to assess the performance of the method on this matrix.

NA Not Applicable; see case narrative.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96
		Date Analyzed:	7/17/96

Matrix Spike Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

Sample Name: Zortman Carbon
Lab Code: K9603970-013

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery*
Arsenic	5	0.2	5.3	102
Barium	5	0.7	5.6	98
Cadmium	1	ND	0.99	99
Chromium	5	ND	4.50	90
Lead	5	ND	4.82	96
Mercury	0.01	0.038	0.049	110
Selenium	1	0.8	1.9	110
Silver	1	0.53	1.52	99

* Percent recovery information is provided in order to assess the performance of the method on this matrix.

Approved By: _____ Date: 7/19/96

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1,2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date TCLP Performed:	7/15/96
		Date Extracted:	7/16/96
		Date Analyzed:	7/17/96

Matrix Spike Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
Units: mg/L (ppm) in TCLP Extract

Sample Name: EX Soil-1
Lab Code: K9603970-017

Analyte	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery*
Arsenic	5	0.5	5.5	100
Barium	5	ND	4.8	96
Cadmium	1	40.4	41.0	NA
Chromium	5	ND	4.34	107
Lead	5	67.3	71.3	NA
Mercury	0.01	0.001	0.011	100
Selenium	1	ND	1.1	110
Silver	1	ND	0.90	90

* Percent recovery information is provided in order to assess the performance of the method on this matrix.

Approved By: _____ Date: 7/19/96

CAS Kelso 1317 S. 13th Avenue, P.O. Box 479, Kelso, WA 98626

Columbia Analytical Services Inc.

Date: 7/19/96

Number of pages including cover sheet:

To: Ed Moriarty

Phone:

Fax phone:

CC:

From: Lynda Stuckester

Phone: (360) 577-7222

Fax phone: (360) 636-1068

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please comment

Total Silicon results.
Please note that the total metals I previously faxed should be reported on an as received basis (not dry weight). Your final hardcopy will be corrected. Please give me a call if you have any questions. Thank you!

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Science Application International Corp.	**Service Request:**	K9603970
Project:	AEH/01-0834-07-4612-062	**Date Collected:**	7/1-2/96
Sample Matrix:	Solid	**Date Received:**	7/3/96
		Date Extracted:	7/17/96
		Date Analyzed:	7/19/96

Total Silicon, as SiO_2
Method: FBA/ICP-OES
Units: mg/Kg (ppm)
As Received Basis

Sample Name	Lab Code	MRL	Result	
Bin 13	K9603970-003	2000	57300	
Pile 697	K9603970-004	2000	20900	
Pile 796	K9603970-005	2000	28000	
Pile 520	K9603970-006	2000	15200	
Pile 464	K9603970-007	2000	10200	
Amarillo Brick	K9603970-010	2000	20900	
X-Cell Optic Flux	K9603970-011	2000	349000	— 34.9% - fails Pb
CR Kendell	K9603970-012	2000	ND	
Zortman Carbon	K9603970-013	2000	53500	
Metals Research Carbon 1127	K9603970-014	2000	212000	
Refactory Brick	K9603970-015	2000	91700	
Helena Brick (PM)	K9603970-016	2000	188000	
EX-Soil-1	K9603970-017	2000	404000	
EX Soil-2	K9603970-018	2000	371000	
East Helena Brick-2	K9603970-019	2000	227000	
Golden Photon	K9603970-020	2000	704000	— 70% - fails cadmium
El Paso Brick	K9603970-021	2000	407000	
Metals Research Carbon 1132	K9603970-022	2000	168000	
Method Blank	K9603970-MB	2000	ND	

Approved By: ____[signature]____ Date: 7/19/96